SEATTLE REGION
PUGET SOUND MARITIME DISASTER RESILIENCE WORKSHOP REPORT

MARCH 24, 2022

Cover photo courtesy of the Port of Seattle

Executive Summary – Seattle Maritime Area Workshop

March 24, 2022

Project Contacts

Program Coordinator:
Sasha Rector
Regional Catastrophic Program Coordinator, King County Emergency Management
srector@kingcounty.gov
206-205-4071

Workshop Coordinator:
Brandon Hardenbrook
Deputy Director
Pacific NW Economic Region
brandon@pnwer.org
206-443-7723

Contributing Participants

- Corina Allen, Chief Hazards Geologist, WA DNR
- Maximilian Dixon, Hazards and Outreach Program Supervisor, WA EMD
- Kenneth Neafcy, Operations Coordinator; Seattle Emergency Management
- Chad Wiesenfeld, Operations Lead; King County Metro Transit Dept., Marine Division
- Russ Read, Port Security Manager and Grants Administrator; Port of Seattle
- Celia Taylor, Special Projects Manager, King County Emergency Management
- Mark Curtis, Director of Emergency Preparedness; Crowley Shipping
- Frank Immel, Business Development Account Executive; Global Diving and Salvage
- Lucia Schmit - Emergency Coordinator, City of Seattle Emergency Management

Purpose

The Six Maritime Area Workshops were designed to identify specific strengths and gaps in response and recovery planning, build relationships and trust between emergency managers and the marine industry, and to inform development of the Maritime Resilience Framework through the identification of maritime assets, plans, and capabilities available after a major earthquake or tsunami incident. For a full recording of the workshop, please see **link here.**

Overview

Exercise Participation: The Seattle area workshop hosted 51 public and private stakeholders from a variety of organizations: Emergency Management; City, County, and State Government; Port Authorities ad Operators; Public and Private Ferry Lines; Maritime Shipping Associations; Tug, Towing, and Barge Companies; Merchant Mariners; and the US Coast Guard.

Anticipated Earthquake and Tsunami Threats: WA EMD and WA Geological Survey provided anticipated earthquake and tsunami impacts for the Puget Sound Region as well as specific information for the Seattle Maritime Area.

Local Response to Anticipated Impacts Panel: Specific areas discussed by members from both the maritime and emergency management sectors included concerns from the various sectors, immediate information needs after an incident, and how long will do citizens need to be prepared to be on their own.

All Hands Discussion: A communication and information-sharing discussion was held regarding the Tonga volcanic eruption and tsunami impacts. Information regarding communication tools and gaps were also discussed.

Best Practices: Seattle workforce rallying points for city staff and Community Points of Distribution alignment

Brief Overview of the Maritime Resilience Framework: Development objectives and processes to identify maritime assets and the resilience of those assets was presented.

Seattle Maritime Area Workshop Results

Identified Plans or Planning Initiatives:

- Sector Puget Sound Maritime Transportation System Recovery Plan (MTSR)
- WA Tsunami Mitigation Planning Initiative (Port of Bellingham)
- Regional Community Points of Distribution Siting and Planning Initiative RCPGP Open Data
- King County Emergency Fuel Planning Initiative
- Since the Exxon-Valdez oil spill, every vessel has a vessel response plan with checklists on incident response
- Local companies have the ability to perform underwater assessments with marine drones and other specialty equipment
- Local ARES groups and Amateur Radio Relay League (ARRL) have done planning for this type of event
- Port maintains their own 800mhtz radio system to allow for coordination and collection of damage assessment reports
- Marine operations teams from maritime companies have plans for vessel monitoring and tracking
- MSRC has linked towers to communicate with vessels across the region during an incident
- Seattle staff rally point coordination and CPOD alignment

Identified Gaps

- Communications capabilities and interoperability in the event of a large-scale power outage
- The need for the development of regional rapid damage assessment protocols & coordination strategy along with a clearinghouse for reported damage information
- Ongoing coordination and communications between all levels of government planners with maritime transportation system stakeholders
- More exploration of process for establishing MOUs and contracts could be a topic of future consideration
- King County Metro Marine division has specific marine capabilities (water rescue, personnel transport, etc.) but may not be integrated into coordination plans of other departments in Seattle and the county
- Opportunity to include marine resources in Seattle rally point coordination and CPOD alignment

Recommendations

The following recommendations were developed based on stakeholder comments, presentations, and panel discussions throughout the workshop to help close gaps highlighted:

- Create regular opportunities for maritime stakeholders to coordinate with emergency management planners to build trusted relationships.
- Continue to identify key maritime assets and capabilities that could assist in response and recovery.
- Develop communication and information-sharing strategies to reach maritime stakeholders.
- Develop a regional maritime and emergency planning communications working group to identify gaps and improvements across the Puget Sound.
- Encourage the Port and surrounding area to work with WA Emergency Management to develop a tsunami mitigation framework.
- Develop and share coordinated rapid damage assessment plans and capabilities across the region.
- Create a standardized process for sharing assessed damage of critical maritime transportation facilities with key organizations and decision makers.
- Explore resources to host an annual regional maritime resilience exercise to test and update plans.
- Integrate King County Metro Marine division into coordination plans of other departments in Seattle and the county to assist during an incident.

Regional Catastrophic Preparedness Grant Program (RCPGP)
Seattle Area Maritime Resilience Workshop Report

Project Overview

The Federal Emergency Management Agency (FEMA) provided a Regional Catastrophic Preparedness Grant (RCPG) to King County on behalf of Central Puget Sound partners to address the enormous risk the region faces from a catastrophic earthquake. The purpose of this project is to maximize the ability of the Maritime sector to assist in the disaster response and recovery from a catastrophic earthquake when road, rail, and air transportation may be disrupted for weeks, months, and even years.

Puget Sound waterways provide a means to transport all manner of personnel, goods, and materiel that may be needed to respond to, recover from, and restore the region after a catastrophic earthquake. The RCPG project focuses on six maritime areas across Puget Sound, involves public and private partners from the region and Alaska, and works to identify maritime assets and capabilities that could play a role in response, recovery, and restoration efforts.

Following a catastrophic earthquake, supplying the Puget Sound Region with life-sustaining commodities such as water and food will require a tremendous, coordinated effort. Current planning to supply Community Points of Distribution (CPODs) assumes that resupply will come via land routes over the Cascade Mountains from the east or by air. These delivery routes are not assured due to the significant potential for large landslides to block the few mountain passes, for bridges to collapse, for airfield runways and facilities to be significantly damaged, and for uncertain availability of aircraft.

The Regional Catastrophic Preparedness Grant (RCPG) project focuses on public and private maritime assets in the following six maritime areas of focus in the Puget Sound Region, and also involves stakeholders from the State of Alaska:

Bellingham	Bremerton	Everett
Seattle	Tacoma	Olympia

Workshop Overview

Facilitated by the Pacific Northwest Economic Region (PNWER), the Seattle area workshop focused on the port and surrounding maritime transportation system assets and capabilities. The workshop was designed to identify specific strengths and gaps in response and recovery planning, build relationships and trust between emergency managers and the marine industry, and to inform development of the Maritime Resilience Framework. A full recording of the workshop can be found **here.**

51 public and private stakeholders attended the workshop from a variety of organizations. Examples of the disciplines represented include:

- Emergency Management
- City, County, and State government
- Port Authorities and Operators
- Public and Private Ferry Lines
- Maritime Shipping Associations
- Tug, Towing, and Barge Companies
- Merchant Mariners
- U.S. Coast Guard

Workshop Goal: Work to identify maritime assets, plans and capabilities available that could play a role in response, recovery, and restoration efforts after a major earthquake and subsequent tsunami.

Objectives:

1. Orient stakeholders to maritime supply chain response and Community Points of Distribution (CPOD) concepts.
2. Connect maritime stakeholders with emergency management and supply chain planners across the region.
3. Identify specific rapid damage assessment plans and information sharing protocols and procedures.
4. Elicit information about stakeholder capabilities, practices, and plans that support maritime supply chain response and recovery efforts.

Sponsor: Funding for the workshop was provided through a Regional Catastrophic Preparedness Grant (RCPG) funded by the Department of Homeland Security. The King County Office of Emergency Management executes the grant on behalf of the eight-county Regional Catastrophic Planning Team (RCPT).

Workshop Design: A planning team consisting of regional and local stakeholders provided input during several planning meetings on the development of the agenda and by identifying specific speakers and topics for discussion. The planning team included:

- Brandon Hardenbrook, Pacific NorthWest Economic Region (PNWER)
- Sasha Rector, Regional Catastrophic Program Coordinator, King County
- Eric Holdeman, Director, Center for Regional Disaster Resilience, PNWER
- Jeannie Beckett, AICP, The Beckett Group
- Russ Read, Port Security Manager and Grants Administrator; Port of Seattle
- Elenka Jarolimek, Seattle Dept. of Transportation
- Frank Immel, Business Development Account Executive; Global Diving and Salvage
- Lucia Schmit - Emergency Coordinator, City of Seattle Emergency Management
- Patrick Gallagher, Executive Director, Marine Exchange
- Chad Wiesenfeld, Operations Lead; King County Metro Transit Dept., Marine Division
- Ron Milke, King County Metro Transit

Seattle Maritime Area: The Port of Seattle provides critical and unique services on behalf of the people of King County and for the benefit of our region. The Port invests in transportation infrastructure, maritime industrial development, tourism promotion and environmental programs to support communities and industries around Washington State. The Port of Seattle, the second largest handler of container cargo in the country, provides a direct connection to the Orient and serves as a major link in trade with markets in Alaska, on the Gulf of Mexico, and on the Atlantic Coast. With its multifaceted

transportation network of freeways, railroads, an airport, a ferry system, and port facilities, Seattle is the principal trade, distribution, financial, and services center for the Northwest. Tourism continues to be a vital part of the city's economy.

The Port participates in the Northwest Seaport Alliance, a marine cargo operating partnership of the ports of Tacoma and Seattle. Started in 2014 as a result of competition from other local ports, The Port of Seattle and Port of Tacoma officially merged all marine cargo operations, where the alliance is overseen by both elected port commissions.

Workshop Summary

Project Welcome - Brendan McCluskey, Director of King County Office of Emergency Management
As the project lead for the eight-county region, Brendan McCluskey welcomed everyone on behalf of the Regional Catastrophic Preparedness Grant Team. He spoke about the importance of the maritime sector and the need to collaborate with all transportation sectors to better coordinate as we prepare for a major disaster. This workshop is the first of many opportunities to strengthen our regional relationships and build new partnerships to become more resilient.

Marin Burnett, Chief Strategy Officer, Port of Seattle
Ms. Burnett placed resiliency in the context of the Port's 25-year vision for the future, the annual goals for the many Port components, and our obligation to build regional prosperity. Resiliency has many definitions and many questions affecting planning, organization, equipment, and training in all our lines of business. Resilience is more than gap analysis–we need to incorporate vision and regional recovery through our people, operations, infrastructure, data, and assets. We need to "sew in" to our process agility, partners, new facilities, maintaining what we have and keeping it all viable on an ongoing basis.

Workshop Introduction and Overview

Sasha Rector, Regional Catastrophic Program Coordinator, King County Office of Emergency Management
Sasha Rector gave a brief overview of the importance of the project and some background information on regional planning underway. King County is managing the project on behalf of the Regional Catastrophic Planning Team and is working closely with partners in all the eight counties in the region.

Project Background and Workshop Goals - Brandon Hardenbrook, Deputy Director, Pacific NorthWest Economic Region
Brandon Hardenbrook explained that the Puget Sound Regional Catastrophic Preparedness Project consists of two phases: In Phase One, a series of workshops will introduce stakeholders to disaster risks, review existing response and recovery plans, and discussed assets and capability gaps; Phase Two facilitates development of the Maritime Resilience Framework. The Framework will create an adaptable and usable document that identifies key maritime assets to aid in emergency efforts and resource distribution.

The Seattle workshop is designed to establish relationships, update current contacts, establish cross-sector trust, and understand roles and responsibilities of key players across the region. Additionally, awareness of relevant technology, such as underwater vehicles, salvage divers, and lessons learned from other disasters, should be spread. Maritime volunteer management is a unique challenge.

Anticipated Earthquake and Tsunami Threats

Corina Allen, Chief Hazards Geologist, Washington Department of Natural Resources, and Maximilian Dixon, Hazards and Outreach Program Supervisor, Washington Military Department

Corina Allen provided attendees with an introduction to the geologic processes and effects that produce earthquakes and tsunamis in the Puget Sound Region. Tsunamis are waves triggered by large disturbances or displacement of seawater, most often caused by earthquakes but can be produced by landslides, volcanoes, or meteorological events.

The Cascadia Subduction Zone is an example of a distant source. The Zone is 700 miles off the West Coast, stretches from Vancouver Island to Northern California, and marks where slowly moving oceanic plates slide under North America. The Zone is the most predictable source in our region, with major events occurring every 300-600 years. Sand deposits in the Region provide historical tsunami evidence. The last great rupture (magnitude 8.0-9.0+ with shaking felt for three to six minutes) occurred about 1700. There is a 10-25% chance of a similar rupture within the next 50 years. A tsunami might arrive at the coast within 10 minutes to several hours. Aftershocks could continue for many years and potentially produce tsunamis themselves.

Allen then pointed out several recent major earthquake and tsunami events that could be indicative of what the Puget Sound Region could experience including:

- The 2004 9.1 earthquake and tsunami in Sumatra which killed around 227,000 people.
- The 2011 9.1 Tohoku Earthquake and tsunami in Japan which killed around 20,000 people.
- Severe economic impacts and initial damage costs in the billions of dollars were also experienced because of these earthquakes and subsequent tsunamis.

She noted that ports need to be prepared for earthquakes because they are often built on mud, sand, and fill which are prone to liquefaction. Ground shaking could result in damage to infrastructure which could lead to chemical and biological spills. Additionally, an earthquake could lead to soil settlement or the loss of pore water pressure in soils or compaction.

Allen followed with some of the tsunami hazards that the maritime community should be aware of including:

- Strong and unpredictable currents
- Water level fluctuations
- Eddies/whirlpools
- Tsunami bores and amplified waves
- Drag--vessels left on land/docks
- Debris
- Scour and sedimentation
- Contaminated water
- Poor decision making
- Dangerous tsunami conditions can last tens of hours

- The first tsunami wave may not necessarily be the largest.

Tsunami Impact:

- Puget Sound contains a complicated system of waterways, islands, peninsulas, inlets and passages.
- Seattle CSZ Event–first wave arrival time 2 hours 30 minutes
- Inundation depth–7 feet
- Current velocity: maximum current speeds of 0-3 produces minimal hazards, 6-9+ can result in major hazards

Several crustal faults in the Puget Sound Basin are potential local tsunami sources with the Seattle Fault being the largest. Less geologic history is available on these local faults, but a Seattle Fault 7.5 magnitude quake occurred in 900-930. There appear to be at least 2500 years between events of this size. Unlike CSZ events, effects from these events are almost immediate and may cause a surge of up to 44 feet.

Allen concluded by providing several links for resources that she mentioned throughout her presentation. These resources can be found in Appendix F.

Following her presentation, Maximilian Dixon spoke further on the maritime earthquake and tsunami hazards in Washington State. He began by providing data on Washington State's maritime assets.

Washington Maritime by the Numbers:

- 3,000 miles of coastline
- $21.4 billion maritime industry
- 31 ports at risk of tsunami damage
- 7 Coast Guard stations and 4 Navy bases
- 700 fishing and seafood processing operations
- Over 400 private marinas
- Northwest Seaport Alliance-5th largest container gateway in the U.S.
- Largest ferry system in the U.S.
- Southern terminal for the Alaska Marine Highway
- Alaska and Hawaii dependent on goods from Washington ports

Dixon touched briefly on the tsunami hazards for harbors and boaters which include strong and unpredictable currents, sudden water-level fluctuations, tsunami bores and amplified waves, eddies and whirlpools, drag on large vessels, debris in the water, scour and sedimentation, and contaminated water and sediment. He showed visuals from the 2011 tsunami in Japan which illustrated these hazards. He also walked through visuals that showed damage in California from the recent Tonga tsunami. There was no reported damage in Washington State.

He then explained the infrastructure and financial impacts that a CSZ earthquake and tsunami would have on the Puget Sound Region. Tsunami waves, liquefaction, and landslides could damage fuel piping systems and pumps; bridges, overpasses, roadway, and other vulnerable transportation infrastructure; and damage port/marina infrastructure and goods, impacting shipping and supply chains. He also gave figures from the 2011 Japanese tsunami which were substantial despite being, arguably, the most

prepared country in the world. Japanese officials estimated that 2,126 roads and 56 bridges were damaged, and 28,000+ ships were also destroyed, along with 319 ports.

Dixon followed this by displaying the HITRAC legend which serves as a color system which indicates the level of damage to infrastructure.

Unpredictable effects on each waterway and anticipated damage to the following:

- Fuel piping systems and pumps
- Bridges, overpasses, roadways
- Port/marina infrastructure and goods
- Supply chain issues
- Communication facilities
- Natural gas facilities
- 54 petroleum processing facilities
- 35 known potable water facilities
- Facilities [sea, air, rail, etc.] west of the I5 corridor may suffer complete to severe damage
- 2.5 years to fully restore many bridges, tunnels, and overpasses

Hazard notification for boaters:

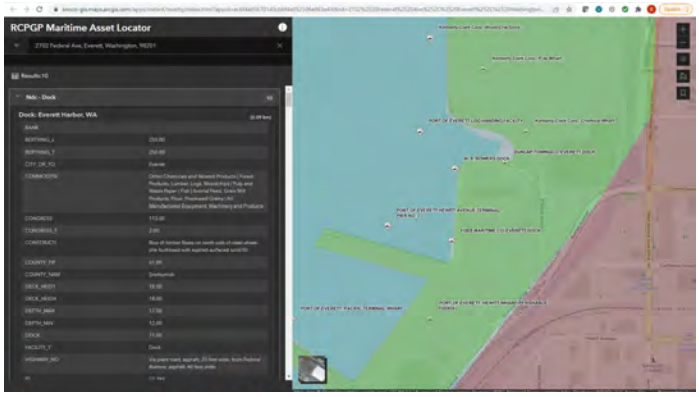
- Reverse 911
- National Tsunami Warning Center
- NOAA weather radio
- State/Local Emergency Operations Centers
- Tsunami alert sirens
- Social media

Additional Comments/Questions

Brandon Hardenbrook: Several Ports and Emergency Planners have asked how to access tsunami alerts and other related resources.
Maximilian Dixon: These are available at tsunami.gov (Note-see Appendix F).

Maritime GIS Mapping Capability Planning Resource

Snohomish County Emergency Management and PNWER collaborated to develop an online GIS mapping tool that consists of open-source maritime transportation system assets across the Puget Sound. These assets include docks, marinas. boat launches and other capabilities that could be utilized during response and recovery efforts. This mapping resource can be found online at RCPGP Open Data - Scroll to the area of interest and click "Search this area" to view more detail about the map markers.



Panel Discussion: Local Response to Anticipated Impacts

- ***Moderator--Eric Holdeman, Director, Center for Regional Disaster Resilience, PNWER***
- **Kenneth Neafcy, Operations Coordinator; Seattle Emergency Management**
- **Chad Wiesenfeld, Operations Lead; King County Metro Transit Dept., Marine Division**
- **Russ Read, Port Security Manager and Grants Administrator; Port of Seattle**
- **Celia Taylor, Special Projects Manager; King County Emergency Management**
- **Mark Curtis, Director of Emergency Preparedness; Crowley Shipping**
- **Frank Immel, Business Development Account Executive; Global Diving and Salvage**

Eric Holdeman began the discussion by asking the panelists what immediate information they are trying to get once the ground has stopped shaking.

Kenneth Neafcy responded that immediately following an earthquake, his team is determining the status of their building, communications, and other departments so that they can begin strategic operations.

Celia Taylor responded that her department's priority would be to confirm the status of the community and community lifelines and from there begin allocating help.

Eric Holdeman asked what would happen in the event the earthquake took place during cruise season while there were 1-3 cruise ships in our port.

Russ Read responded the Port's primary function would be to first make sure people are safe. Then they would begin establishing internet, cell, and telephone communication. There is a lot of variability in terms of the cruise ships, depending on the season and time of day. The Port would likely begin damage assessment and establish their EOC at SeaTac.

Chad Wiesenfeld said that his team's number one concern would be the safety of their passengers and staff. They would work to confirm damages and injuries, then they would determine if it is safe to return to the Port.

Holdeman asked what plans and procedures are in place for rapid damage assessments to take place.

Russ Read stated that the Port of Seattle has a standing operating agreement with the NW Seaport Alliance and identified that the Port has their own radio operations.

Holdeman asked Neafcy if there are plans for the Seattle Fire Department to carry out “windshield assessments”.

Neafcy responded that the windshield surveys conducted by the fire department are initial assessments in the hour or so following an earthquake where they use all on-duty circuits to assess damages and life safety. That information is then radioed into the department operation center which is located next to the Seattle EOC.

Holdeman asked about a software program called One Concern that essentially takes inventory of buildings, soil conditions, etc. to project damages that will likely occur based on location.

Neafcy responded that the platform has been used and taken into account when evaluating plans and procedures.

Mark Curtis responded that internally Crowley would initially establish who had been impacted shoreside. Crowley has a virtual indecent command post, and their marina team would reach out to ships to assess their status. He noted that since the Exxon-Valdez oil spill, every vessel has a vessel response plan. If any cargo was lost, they would likely utilize a salvage service.

Holdeman asked what everyone anticipates they will likely have trouble with.

Taylor stated that she fears we will run into obstacles with communications, as well as issues staffing their operations center.

Wiesenfeld has concerns about knowing when they will be able to resume operations from a communications standpoint.

Eric asked Frank what specialized tools Global Diving and Salvage has for this kind of event.

Frank responded that his company has specialized teams for different operations. Whether or not they can utilize these tools will depend on availability but they have the ability to perform underwater assessments as well as right above the water line. Seattle is their main office, but they have operations all over the Puget Sound that would muster to different locations.

John Veentjer, a retired Captain of the Port in Philadelphia, said the Port would definitely close before vessels could get into the port, and if there is time, they will look to move vessels.

Holdeman asked when panelists anticipate outside support would arrive in the region.

Taylor responded that her guess would be within 2 weeks, there are some prestaged assets but none of that will be enough.

Neafcy responded that there are too many factors to know exactly when that support would arrive.

Other Comments/Questions

All Hands Discussion: Tsunami Warnings Following the Tonga Volcanic Eruption
Moderated by Jeannie Beckett, AICP, The Beckett Group
Jeannie Beckett began the session by asking attendees several questions regarding the recent Tsunami alert. Questions for the group discussion included:

- What kind of communication tools did you use during the event?
  - Radios
  - Conference calls
  - Emails
  - Websites, news reports
  - FEMA notifications
  - WA Emergency Management Division alert
- What worked best?
- What needs improvement?
- Were you a part of a team that had communication protocols? Or were you on your own?

Frank Immel in chat: I am very interested in participating in a communication workgroup.

Rep. Ryu in chat: Please add me. Would like to know how bills like HB 1703 on 911 is relevant/helpful https://app.leg.wa.gov/billsummary?BillNumber=1703&Year=2021&Initiative=false

Chad Wiesenfeld in chat: The King County Metro Marine Division can also utilize Water Taxis to get essential personnel to response locations ashore or at sea

Russ Read responded that he got the alert on all of his mobile devices, and participated in the hourly conference calls held by the state.

Maximilian Dixon responded that once the event was given an advisory, they ramped up their response by initiating conference calls with the National Warning System and sending out the work group notes to their email list. If it was a warning, they would immediately set off sirens, EAS, and wireless alerts.

Celia Taylor responded that they are active 24/7 with a duty officer, so their duty officer discussed potential operations if needed. The event created an opportunity for them to modify practices and acted as a test run.

John Veentjer got the message and talked to his office to make sure they were ready to respond. In an event, the internet and electricity may be unavailable. The best communications system they have available is amateur radio which is already employed by emergency managers. It all depends on electricity, generator and fuel availability.

Cindi Barker in the chat: For radio, you should contact the local ARES groups now to make sure frequencies can be identified for your purposes. This could be part of some of the CR2022 discussion. You should add Monte Simpson to your communications work group. He is the Amateur Radio Relay League (ARRL) representative for the Puget Sound region: MonteW7FF@outlook.com

Russ noted that this is a region-wide/state-wide communication challenge. He would hope that the State would help with the education of the public on this topic.

Maximilian asked that participants have a half-tank of gas at all times and an emergency preparedness kit in your car. Your car acts as a generator and can charge your phone, has a radio, etc. He asked participants to sign up for alerts as well.

Links: mil.wa.gov/alerts , mil.wa.gov/preparedness, mil.wa.gov/tsunami. Please email Elyssa.tappero@mil.wa.gov to be added to the tsunami workgroup email list and/or AlertSense list (for tsunami alerts). Please also email Elyssa.tappero@mil.wa.gov if you are interested in participating in the tsunami PIO/outreach workshops to develop/share canned messaging and graphics.

Corina in the chat: Practice tsunami evacuation now so it is muscle memory and you aren't trying to figure out where to go in an event.

Jeannie Beckett directed the conversation toward response in the event of an earthquake. The tsunami was a "non-event" but an earthquake would certainly be. What would be done differently?

Russ Read responded that it really depends on what is still operating. They will try to get information out as best we can. The Port will look at live broadcasts. It also depends on what time of day the event takes place. In that case, they look into email, texts, phone calls, etc. They will rely on radio systems but there are other facilities we have to rely on for that so it all depends on what is still up and available.

Questions:
Brandon Hardenbrook: How are contracts handled in an event where rapid response is needed?
Frank Immel: The Coast Guard will be the first to react, shut down the port, and coordinate response right away. In the first week it would likely go through the coast guard and then as time goes on and damage assessments have been done, then it will be up to the companies to handle contracting. It will likely be done through the coast guard, FEMA, and other government agencies.

Victor Harris made several comments on the alerts.

Randy Hansen in the chat: From the Port side - a Declaration of Emergency by the Exec/Dir will remove typical RFP process slowdowns and allow expedited acquisition of needed logistical support.

Maximilian Dixon: There are different advisories for different times, events, and places. You will only receive notifications for events in areas you have identified you want to receive alerts, advisories, and warnings for.

Dixon added that WA EMD is currently working with their communications team for a big social media push to reach a wider audience. They are working to provide outreach teams with easy graphics to share in multiple languages to get information out as quickly and efficiently as possible.

Dixon responded that siren activation depends on how quickly cell phone towers and other networks go down. The sirens are operated through satellite and internet but can be locally sounded through radio. They run on battery power, although it is unknown how many hours they would last. He highlighted that the best indicator of a large-scale event such as an earthquake or tsunami are the physical warning signs. If you feel the ground shaking, find cover then head to high ground if you're near a body of water. He also noted that people also need to know what to do in the event they are not on land when this occurs but on a vessel.

Questions:
Brandon Hardenbrook: If the tsunami was of greater impact, how would WA EMD go about collecting impact data?

Maximilian Dixon: Corinna Allen with the WA Geological Survey and DNR are spearheading a clearinghouse that would be in place to collect that kind of information through field work once it's up and running. Without that, the typical response process would be through state level conference calls the same way we do with any other emergency.

Best Practices in the Seattle Region: Volunteer Management-

Lucia Schmit - Emergency Coordinator, City of Seattle Emergency Management

There will be an initial isolation phase which will consist of making due with what we have for quite a while. It all depends on how severe the event is and how significant the damage is that it causes. Workforce rallying points will not be used for lifesaving operations, they will be used for assignments if they do not have emergency response duties, or if they cannot get to where they need to be but are available. The EOC will work on consequence management for things such as access to food and water. The rallying points can be used as a way to recruit into the communities. Each workforce rallying point is structured around FEMA's community lifelines and what resources are available in your specific community.

If communities become isolated following a disaster, more than one VRC may need to be set up. Lucas gave an example of this happening during 2014's SR 530 mudslides when the county had to set up two VRCs in Arlington and Darrington as well as a pseudo third center that was run by the community in Oso. Lucas noted that what Emergency Management wants to do is build on the Map Your Neighborhood program to ensure that communities are prepared to be isolated for several days up to two weeks especially in rural areas and areas with expected high infrastructure damage and a long-expected repair time.

Hardenbrook then asked for questions or highlights from other participants around planning for volunteer management that could benefit the maritime disaster resilience project, such as identifying the fleet as official emergency volunteers.

Hardenbrook added that King County and Washington State are currently working on fuel planning efforts. King County is working on a fuel allocation plan to determine fuel prioritization for critical infrastructure and services.

The Coast Guard does plan to coordinate with the ferries (WA State, Kitsap County, other local ferries) to move responders around the region.

Brief Overview of the Maritime Resilience Framework
Presented by Daryl English, Senior Project Manager and David Cruz, Senior Port Planner of Moffat & Nichol
The Maritime Resilience Framework will be a usable document that evolves over time, identifies key maritime assets, and assesses how resilient those assets are. The document will also outline processes and actions to take before, during, and after a large-scale emergency. The purpose of the framework is to incorporate maritime and transportation resources to use, receive, and distribute the sustaining commodities to CPODs with maritime assets in the event of a CSZ or Crustal Fault Event.

Closing Remarks
Sasha Rector, King County Regional Catastrophic Program Coordinator, thanked the attendees for their contributions and their enthusiasm. The upcoming workshops will continue gathering additional information and identifying gaps, which will inform the specific goals and deliverables that will be incorporated into the Maritime Disaster Resilience Framework. A follow-on regional workshop will take place in May and will include all six maritime areas.

Recommendations
The following recommendations were developed based on stakeholder comments, presentations, and panel discussions throughout the workshop to help close gaps highlighted:

1. Create regular opportunities for maritime stakeholders to coordinate with emergency management planners to build trusted relationships.
2. Continue to identify key maritime assets and capabilities that could assist in response and recovery.
3. Develop communication and information-sharing strategies to reach maritime stakeholders.
4. Develop a regional maritime and emergency planning communications working group to identify gaps and improvements across the Puget Sound.

5. Encourage the Port and surrounding area to work with WA Emergency Management to develop a tsunami mitigation framework.
6. Develop and share coordinated rapid damage assessment plans and capabilities across the region.
7. Create a standardized process for sharing assessed damage of critical maritime transportation facilities with key organizations and decision makers.
8. Explore resources to host an annual regional maritime resilience exercise to test and update plans.
9. Integrate King County Metro Marine division into coordination plans of other departments in Seattle and the county to assist during an incident.

Acronyms

AAR	After Action Report
ARES	Amatuer Radio Emergency Service
CRDR	Center for Regional Disaster Resilience
CPOD	Community Point of Distribution
DHS	Department of Homeland Security
EMD	Emergency Management Division
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
NANOOS	Northwest Association of Networked Ocean Observing Systems
PNWER	Pacific Northwest Economic Region
RCPG	Regional Catastrophic Preparedness Grant
RRAP	Regional Resiliency Assessment Program
USCG	United States Coast Guard
VRC	Volunteer Reception Center

Resources

Planning Resources – During the workshop several planning and information resources were mentioned to assist in the planning and coordination after a major disaster. These can be found at--

https://www.cisa.gov/regional-resiliency-assessment-program

Maritime Coordination | RCPGP Hub - Home (arcgis.com)

Alerts | Washington State Military Department, Citizens Serving Citizens with Pride & Tradition

Emergency Management Information portals (wa.gov)

Joint Logistics Over the Shore edocs.nps.edu/dodpubs/topic/jointpubs/JP4/JP4-01.6_050805.pdf

Tsunami Warning and Alert Page https://tsunami.gov/

Geologic Information Portal https://geologyportal.dnr.wa.gov/

Tsunami Hazard Maps
https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/tsunamis#tsunami-hazard-maps

Tsunami Evacuation Maps
https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/tsunamis#tsunami-evacuation-maps

Tsunami Simulations
https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards/tsunamis#tsunami-simulation-videos

Northwest Association of Networked Ocean Observing Systems (NANOOS) Pacific Northwest - NANOOS - The U.S. Integrated Ocean Observing System (IOOS) (noaa.gov)

Nanoos Mobile Tsunami Evacuation app
http://www.nanoos.org/mobile/tsunami_evac_app.php

Tsunami Design Zone Maps for Washington State Building Code https://www.dnr.wa.gov/wa-td

SEATTLE REGION MARITIME DISASTER RESILIENCE WORKSHOP

A Regional Catastrophic Planning Grant Project

Thursday, March 24, 2022 | 9:00 am to 12:30 pm

Virtual Attendance via Zoom

WELCOME & INTRODUCTIONS | 9:00 AM

Welcome & Opening Remarks will be provided by Brendan McCluskey, Director of King County Emergency Management, and Marin Burnett, Chief Strategy Officer for the Port of Seattle.

Brendan McCluskey
Director,
King County Emergency Management

Marin Burnett
Chief Strategy Officer,
Port of Seattle

PROJECT OVERVIEW | 9:15 AM

Sasha Rector, Regional Catastrophic Program Coordinator at King County Emergency Management, and Brandon Hardenbrook, Deputy Director of the Pacific Northwest Economic Region, will give a brief presentation on the project and the workshop goals and objectives.

King County
Emergency Management
Sasha Rector
Regional Catastrophic
Program Coordinator,
King County Emergency Mgmt

Brandon Hardenbrook
Deputy Director,
Pacific NorthWest
Economic Region

ANTICIPATED EARTHQUAKE & TSUNAMI HAZARDS | 9:40 AM

Experts from Washington Geological Survey and Washington Emergency Management Division will describe what the Olympia area can expect during a Cascadia Subduction Zone Earthquake.

Corina Allen
Chief Hazards Geologist,
Washington Geological Survey

Maximilian Dixon
Hazards and Outreach
Program Supervisor,
Washington Military Department -
Emergency Management Division

BREAK | 10:30 AM

Visit our webpage at
Kingcounty.gov

King County
Emergency Management

Puget Sound
Regional Catastrophic
Preparedness
Grant Program

Pacific NorthWest
Economic Region

CRDR

LOCAL RESPONSE TO ANTICIPATED IMPACTS | 10:35 AM

Short presentation on GIS map of maritime capabilities in the area, followed by panel discussion with several key maritime and emergency management partners. Moderated by Eric Holdeman, Director of PNWER's Center for Regional Disaster Resilience.

Kenneth Neafcy
Operations Coordinator, Seattle Emergency Management

Chad Wiesenfeld
Operations Lead, King County Metro Transit Department, Marine Division

Russ Read
Port Security Manager and Grants Administrator, Port of Seattle

Celia Taylor
Special Projects Manager, King County Emergency Management

Mark Curtis
Director of Emergency Preparedness, Crowley Shipping

Frank Immel
Business Development Account Executive, Global Diving and Salvage

FACILITATED DISCUSSION:
Communication and Information Sharing Tools | 11:30 AM

Attendees will be invited to join a discussion about how to build connections between the maritime industry and emergency managers and provide for better communication, information sharing, and understanding each partner's roles and responsibilities in the event of a disaster. Moderated by Jeannie Beckett, Principal at The Beckett Group.

Jeannie Beckett
Principal, The Beckett Group

BEST PRACTICES IN THE SEATTLE REGION | 12:00 PM

Lucia Schmit, Planning Coordinator for Seattle Office of Emergency Management will speak on workforce rally points for city staff and alignment of Community Points of Distribution (CPODs).

Lucia Schmit
Planning Coordinator, Seattle Office of Emergency Management

VISION FOR MARITIME RESILIENCE FRAMEWORK | 12:10 PM

David Cruz will brief Moffat & Nichol's upcoming work to develop a Maritime Resilience Framework and invite input from workshop participants on how to keep the Framework updated and relevant and ensure the maritime sector can stay engaged.

David Cruz
Senior Port Planner, Moffatt & Nichol

ADJOURN | 12:30 PM

Visit our webpage at Kingcounty.gov

SEATTLE REGION MARITIME DISASTER RESILIENCE WORKSHOP

March 24, 2022 | 9:00 am to 12:30 pm

Featured Speakers

BRENDAN MCCLUSKEY

DIRECTOR

KING COUNTY OFFICE OF EMERGENCY MANAGEMENT

Brendan McCluskey is the Director of Emergency Management for King County. King County Emergency Management is responsible for regional emergency preparedness and operations, including mitigation, response, and recovery, and a variety of homeland security matters. Mr. McCluskey oversees all functions of the organization, from planning, to public outreach, to grant management, to operations coordination and EOC operations. McCluskey is the County Executive's representative to the King County Emergency Management Advisory Committee, a designee to the State Emergency Management Advisory Group, and a core member of the Seattle UASI. King County Emergency Management was accredited by the Emergency Management Accreditation Program (EMAP) in 2017.

MARIN BURNETT

CHIEF STRATEGY OFFICER

PORT OF SEATTLE

Marin Burnett is the Chief Strategy Officer for the Port of Seattle. In her role, she manages the Port's Century Agenda, its 25 year plan for the future, as well as strategic planning efforts across the organization and interdepartmental projects like the Resiliency and Policing assessments. As part of her planning with the Port, Marin also manages review and research of disruptive events, technologies and phenomena that might impact the Port or port-related industries. Prior to her time at the Port, Marin was the Senior Policy Advisor for Johns Hopkins University and Medicine in Baltimore, MD. There she advised and provided tactical guidance for Johns Hopkins leadership on government affairs and response to federal legislation that might impact the university and lines of business. Marin was also a Principal Analyst at the Congressional Budget Office where she managed legislation and federal spending for the Department of Justice, The National Science Foundation, The National Park Service and NASA. In her spare time, Marin is mom to 8-year old Dominic and an artist with work at the Henry art Museum in Seattle, WA.

Presenters

CORINA ALLEN
CHIEF HAZARDS GEOLOGIST
WASHINGTON GEOLOGICAL SURVEY

Corina Allen is the Chief Hazards Geologist at the Washington Geological Survey and is the program manager for the earthquake, tsunami, and volcanic hazards section of the Survey. Corina is the State science representative for the National Tsunami Hazard Mitigation Program and is a member of the Tsunami Science and Technology Advisory Panel for the National Oceanic and Atmospheric Administration.

MAXIMILIAN DIXON
HAZARDS AND OUTREACH PROGRAM SUPERVISOR
WASHINGTON MILITARY DEPARTMENT, EMERGENCY MANAGEMENT DIVISION

Maximilian Dixon is the Hazards and Outreach Program Supervisor for the Washington State Military Department's Emergency Management Division (WA EMD). He manages the Earthquake, Tsunami, Volcano, Public Education, Preparedness and Outreach Programs and represents WA EMD as the subject matter expert and policy advisor on geological hazards, preparedness and outreach issues. Maximilian is responsible for coordinating geological hazard risk reduction efforts between international, federal, state, tribal, and local partners.

LUCIA SCHMIT
PLANNING COORDINATOR
SEATTLE OFFICE OF EMERGENCY MANAGEMENT

Lucia Schmit is Planning Coordinator at the Seattle Office of Emergency Management where she facilitates inter-departmental emergency plans. Prior to coming to Seattle, Lucia gained emergency management experience at the local, state, Federal and international levels. Lucia led the 2017 revision of the National Incident Management System (NIMS) while working for FEMA and before that led international disaster management technical assistance programs with the US Forest Service.

DAVID CRUZ
ALL HAZARDS TECHNICAL LEAD
MOFFATT & NICHOL

David Cruz has more than 40 years of experience as a planner for port-wide studies and maritime facility projects. He has specialized in project management and civil design for port security projects and all hazards' studies. Mr. Cruz is ANSI/ASME certified in Risk Analysis and Management for Critical Asset Protection (RAMCAP). He has international experience including conducting port and rail facilities' assessments in Peru, Chile, South Africa, and Myanmar. Projects he has worked on include: Puget Sound Regional, All Hazards Risk Management/Mitigation Plan, Trade Resumption/Resiliency Plan, and Area Maritime Security (AMS) Assessment, Puget Sound, WA; Port of Tacoma Tideflats Facility All Hazards Assessment; and Area Maritime Security Committee Port-Wide All Hazards Management Plan, Los Angeles and Long Beach, CA.

Panelists

MARK CURTIS
DIRECTOR OF EMERGENCY PREPAREDNESS
CROWLEY SHIPPING

Mark Curtis has served in diverse roles across the maritime sector and in 2000 earned a BS in Maritime Safety and Environmental Compliance from Massachusetts Maritime Academy. During his time at the Academy, he participated in a GLOBEC Study on a National Oceanic and Atmospheric Administration Vessel and worked in oil spill response, recovery, and training in Santa Barbara, California. He then moved on to Royal Caribbean Cruises, where he spent nine years at sea as a Vessel Environmental Officer & Engineering Compliance officer. After several other roles with Royal Caribbean, he joined Crowley Petroleum Services in 2018 as an Operations Integrity Manager. He now serves as the Director of Emergency Preparedness for Crowley.

FRANK IMMEL
BUSINESS DEVELOPMENT ACCOUNT EXECUTIVE
GLOBAL DIVING AND SALVAGE

Frank Immel has been with Global Diving & Salvage, Inc. since 2005. Prior positions at Global include Lead Estimator and Marketing Manager. We have decades of experience in managing every aspect of response operations, while also ensuring efficiency and safety throughout complex projects.

KENNETH NEAFCY

OPEPRATIONS COORDINATOR

SEATTLE EMERGENCY MANAGEMENT

Kenneth Neafcy is the Operations Coordinator for the City of Seattle Office of Emergency Management where he oversees EOC readiness and the 24-hour Staff Duty Officer program. During his time in Seattle, he has served as the Operation Section Chief or EOC Director in over a dozen EOC activations. Prior to that ,he served in the same role for the City of Austin Office of Emergency Management where we worked several large incidents including Hurricanes Rita, Katrina, and Ike along with 9/11/01 activation in Austin. He was also a type 3 Plans Section Chief and Logistics Section Chief on a Texas regional Incident Management Team.

RUSS READ

PORT SECURITY MANAGER AND GRANTS ADMINISTRATOR

PORT OF SEATTLE

Russ Read is the Senior Manager, Maritime Security for the Port of Seattle. He is responsible for the security of the Port's Corporate, Real Estate and Maritime properties our staff, tenants and the public. He also serves as the Facility Security Officer for U.S. Coast Guard regulated facilities at the Port of Seattle ensuring regulatory compliance. Mr. Read also the maritime subject matter expert for emergency preparedness, response, and recovery and is the Port of Seattle's FEMA Port Security Grant Administrator, having secured over $30+ million in grant funded equipment and programs for the Port. Mr. Read is an active member of the U.S. Coast Guard Sector Puget Sound Area Maritime Security Executive Steering Committee, U.S. Coast Guard Port Readiness Committee, and represents Public Ports on the Puget Sound Harbor Safety Committee. Mr. Read has been actively involved with the Washington State Department of Emergency Management in the development and exercising of earthquake and tsunami plans for the greater Puget Sound (Salish Sea) region. Mr. Read has been at the Port of Seattle for eighteen years, having previously served fifteen years as a United States Coast Guard Officer with a background in facilities and container inspections, environmental response, special interest vessel program, contingency planning and maritime intelligence. Mr. Read has also been a parole and probation officer and Deputy Sheriff in Oregon prior to his career in the U.S. Coast Guard and has a bachelor's degree in Political Science, with a minor in Russian Studies from Oregon State University. Mr. Read is a Washington State licensed private investigator, Board member of APNAI (A Professional Network of Affiliated Investigators) and a member of the International Association of Law Enforcement Intelligence Analysts, The Association of Former Intelligence Officers, and is a professional photographer.

CELIA TAYLOR
SPECIAL PROJECTS MANAGER,
KING COUNTY EMERGENCY MANAGEMENT

CHAD WIESENFELD
OPERATIONS LEAD
KING COUNTY METRO TRANSIT DEPARTMENT, MARINE DIVISION

Facilitators and Moderators

BRANDON HARDENBROOK
CHIEF OPERATING OFFICER
PACIFIC NORTHWEST ECONOMIC REGION

Mr. Hardenbrook's duties include overseeing all PNWER staff and programs in coordination with PNWER's governing board, which includes legislative leadership of each state, province, and territory as well as governors and premiers, and private sector leaders. PNWER's 22 working groups include trade & economic development, energy, border issues, agriculture, invasive species, tourism, disaster resilience, transportation, water policy and others.

ERIC HOLDEMAN
DIRECTOR
CENTER FOR REGIONAL DISASTER RESILIENCE

Eric Holdeman is the Director of the Center for Regional Disaster Resilience (CRDR), which is part of PNWER. His areas of expertise include building regional coalitions between agencies, governments, the private sector and non-profits. Building regional disaster resilience is key to what he does day-to-day. He has also authored numerous articles for professional journals and opinion pieces for local, regional and national newspapers. He is a Senior Fellow, columnist, contributing writer and blogger for Emergency Management Magazine. An experienced and accomplished public speaker, he is sought after to present at national and regional conferences. Eric has the United States' most popular blog on the topic of emergency management at www.disaster-zone.com.

SASHA RECTOR
REGIONAL CATASTROPHIC PROGRAM COORDINATOR
KING COUNTY EMERGENCY MANAGEMENT

JEANNIE BECKETT
PRINCIPAL
THE BECKETT GROUP

Jeannie's 40 years of expertise in provides her clients with "boots on the ground" knowledge of business continuity, emergency management and the logistics of inland transportation. Ms. Beckett works with agencies and associations to leverage their resources and build economic vitality for their regions. Before starting The Beckett Group in 2009, She had a 25 year career with the Port of Tacoma in leadership positions including Senior Director, Inland Transportation, and Director of Operations. Jeannie has worked on projects that profile the logistics and freight delivery needs, business resiliency and recovery as well as infrastructure resiliency efforts. These projects pinpointed areas of inefficiency in the highway and rail freight delivery systems and the lack of business / infrastructure continuity planning.